WHAT IS CLAIMED IS:

1. A method of providing a desired amount of active power from a first electrical region to a second electrical region, said method comprising:

   diverting a current from said first region to an input of a first controlled voltage source, said input at an input voltage;
   adding to said input voltage, using said first controlled voltage source a first control voltage at a controlled amplitude and phase angle to provide an intermediate voltage at an output of said first controlled voltage source;
   diverting a current, from said output of said first controlled voltage source;
   adding to said intermediate voltage, using a second controlled voltage source a second control voltage at a controlled amplitude and phase angle to provide from an output of said second controlled voltage source a current to said second region;
   providing active power for said second controlled voltage source from said first controlled voltage source;
   controlling said first and second control voltages in magnitude and phase to provide said desired amount of active power to said second region, and so that substantially all active power provided to said first controlled voltage source is coupled to said second voltage source.

2. The method of claim 1, wherein said diverting a current, comprises diverting a current through an adjustable susceptance.

3. The method of claim 2, further comprising storing sets of operating points for use by said controller, choosing one of said sets of operating points to provide said desired active power, and controlling said first and second control voltages to provide said desired amount of active power while maintaining said one of said sets of operating points.

4. The method of claim 3, further comprising controlling a value of said adjustable susceptance.

5. The method of claim 2, further comprising controlling a voltage at said susceptance, in order to control current diverted through said susceptance.

6. The method of claim 1, wherein said first and second controlled voltage sources are coupled to each other by an energy storage device, and further comprising controlling an average energy in said energy storage device to remain constant.

7. The method of claim 6, wherein said controlling an average energy comprises controlling current to said input to maintain said average energy stored in said energy storage device, thereby compensating for losses in said electrical power flow controller.

8. The method of claim 6, wherein said energy storage device comprises a capacitor, and wherein said controlling average energy in said energy storage device to remain constant comprises controlling said first and second control voltages to maintain a DC voltage across said capacitor.

9. The method of claim 1, further comprising controlling said first and second control voltages in magnitude and phase to provide a desired reactive power from an output of said second controlled voltage source.

10. The method of claim 1, further comprising controlling said first and second control voltages in magnitude and phase to obtain a desired reactive power from an input of said first controlled voltage source.

11. A method of diverting a controlled quantity of active electrical power from a first electrical region to a second electrical region, said method comprising:

providing said active electrical power to an input of a power flow controller;

diverting a portion of said active electrical power provided to said input to a first power converter;

providing a remaining portion of said active electrical power from said input to an output of said power flow controller;

providing active power from said power converter to said output of said power flow controller and thereby to said second electrical region;

varying a phase angle of electrical current at said output relative to said input by providing current from said input to an intermediate node, and diverting a portion of said current at said intermediate node through a susceptance

controlling said first power converter, so that said desired quantity of active electrical power is diverted from said first electrical region to said second electrical region.

12. The method of claim 11, wherein said active power from said first power converter is provided to said output by a second power converter coupled to said first power converter.

13. The method of claim 12, further comprising controlling said second power converter to couple substantially all of said active power from said first power converter to said output.

14. The method of claim 11, further comprises controlling said first and second power converters to divert a first controlled amount of reactive power to said power flow controller.

15. The method of claim 14, further comprising controlling said first and second power converter to provide a second controlled reactive power to said output.

16. An electrical power flow controller comprising:

an input and an output;

a first power converter and a second power converter connected in series to each other between said input and output;

a susceptance connected in shunt to a node between said first power converter and said second power converter;

a controller in communication with said first power converter and said second power converter, said controller operable to control said first power converter and said second power converter to provide a controlled quantity of active power to said output, and draw said controlled quantity of active power from said input.

17. The electrical power flow converter of claim 16, wherein said first power converter comprises a transformer coupled voltage–sourced converter.

18. The electrical power flow converter of claim 18, wherein said second power converter comprises a transformer coupled second voltage-sourced converter.

19. The electrical power flow converter of claim 17, wherein said first power converter is a first electromechanical power converter and said second power

converter is a second electromechanical power converter; said second electromechanical power converter coupled to said first electromechanical power converter to exchange active power.

20. The electrical power flow controller of claim 17, wherein said controller is operable to control said first power converter and said second power converter to provide a first controlled amount of reactive power at said input terminals.

21. The electrical power flow controller of claim 17, wherein said controller is operable to control said first and second power converters to provide a second controlled amount of reactive power at said output terminals

22. An electrical power flow controller comprising:

an input and output;
a reactance connected in series between said input and said output;
a first set of terminals connected in shunt with said input and coupling a first power converter;
a second set of terminals connected in shunt with said output and coupling a second power converter;
said first power converter coupled to provide active power to said second power converter;
a controller in communication with said first and second power converters;
said controller operable to control said first and second power converters to provide a controlled quantity of active power from said output, and draw said controlled quantity of active power from said input.

23. The electric power flow controller of claim 22, further comprising an energy storage device coupling said first power converter to said second power converter, and wherein said controller is further operable to control current

from said input to maintain an energy stored in said energy storage device, thereby compensating for losses in said electrical power flow controller.

24. A power flow control circuit for diverting electrical power from a first region to provide a controlled amount of active power to a second region, said power flow control circuit comprising

a first controllable voltage source providing a first controllable voltage between its input and its output, wherein its input is for interconnection to said first region;
a second controllable voltage source providing a second controllable voltage between its input and its output, wherein its output is for connection to said second region;
said output of said first controllable voltage source connected to said input of said second controllable voltage source;
an impedance connected in shunt to a node between said output of said first power converting circuit;
said second controllable voltage source coupled to said first controllable voltage source to obtain active power from said first controllable voltage source;
a controller in communication with said first and second controllable voltage sources to control said first and second controllable voltages to provide said active power to said second region from power from said first region, and to couple substantially all active power provided to said first controlled voltage source to said second voltage source.

25. A method of compensating electrical losses in an electrical power flow controller, said power flow controller comprising first and second power converters for diverting a controlled quantity of active electrical power from a first electrical region to an input of said power flow controller and from an output of said power flow converter to a second electrical region, said first and

second power converters coupled to each through an energy storage device to exchange energy between said first and second power converters, said method comprising:

controlling current to said input to maintain an energy stored in said energy storage device, thereby compensating for losses in said electrical power flow controller.